

CLAIMS

1. A high-strength thick steel plate excellent in low temperature toughness at heat affected zone resulting from large heat input welding, characterized by containing, by wt%,

C: 0.03-0.14%,
Si: 0.30% or less,
Mn: 0.8-2.0%,
P: 0.02% or less,
S: 0.005% or less,
Al: 0.001-0.040%,
N: 0.0010-0.0100%,
Ni: 0.8-4.0%,
Ti: 0.005-0.030%, and
Nb: 0.003-0.040%,

where Ni and Mn satisfy equation [1], and the balance of iron and unavoidable impurities:

$$\text{Ni/Mn} \geq 10 \times \text{Ceq} - 3 \quad (0.36 < \text{Ceq} < 0.42) \quad [1]$$

where, $\text{Ceq} = \text{C} + \text{Mn}/6 + (\text{Cr} + \text{Mo} + \text{V})/5 + (\text{Ni} + \text{Cu})/15$

2. A high-strength thick steel plate excellent in low temperature toughness at heat affected zone resulting from large heat input welding according to claim 1, characterized by further containing, by wt%,

one or more of:
Ca: 0.0003-0.0050%,
Mg: 0.0003-0.0050%, and
REM: 0.001-0.030% and

contains at least 100/mm² of oxide particles containing

O: 0.0010-0.0050%

and having a equivalent circle diameter of 0.005 to 0.5 μm .

3. A high-strength thick steel plate excellent in low temperature toughness at heat affected zone resulting from large heat input welding according to claim 1 or 2, characterized by further containing, by wt%,

B: 0.0005-0.0050%.

4. A high-strength thick steel plate excellent in

low temperature toughness at heat affected zone resulting from large heat input welding according to any one of claims 1 to 3, characterized by further containing, by wt%,

5

one or more of:

Cr: 0.1-0.5%,

Mo: 0.01-0.5%,

V: 0.005-0.10%, and

Cu: 0.1-1.0%.